


Fireworks/Explosives

OD Briefing #2

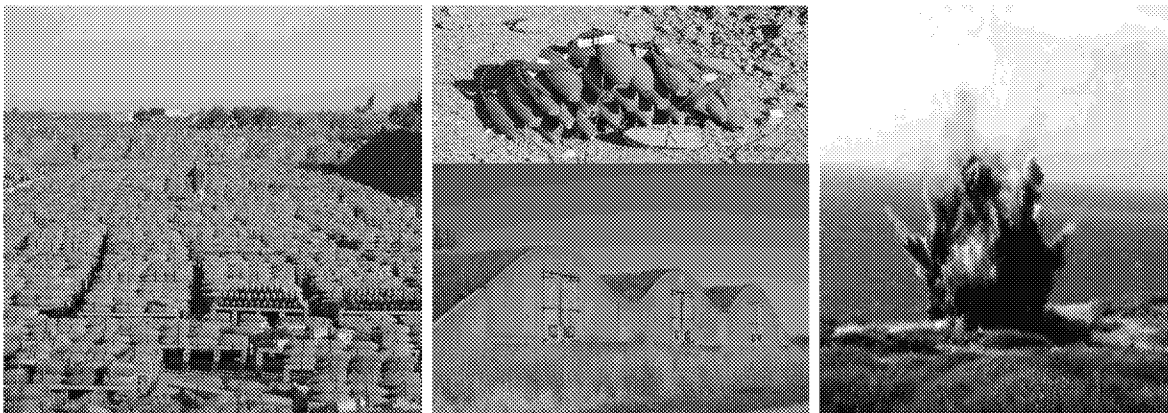


Broader Explosives Waste Management
Concerns/Efforts

BRIEFING PURPOSE

- Alert Management- Open Burning/Open Detonation (OB/OD)
 - safety, environmental, policy, and regulatory concerns and problems/opportunities
 - “buy-in” on recommended path forward, including more ORCR resources

Explosive Waste Management Concerns/Efforts



Explosive Waste Management Concerns/Efforts

- Current situation
- Problem wastes
- Safety and Environmental Impacts
- Possible solutions
- Our conclusions and recommendations

Attachments to Support Information-

- Appendix A: Camp Minden update
- Appendix B: "Public" entities that have expressed interest in resolving OB/OD issues
- Appendix C: NBSCAB letter to Congress and grant proposal
- Appendix D: Details regarding safety; public health/environmental concerns; contamination data; cleanup costs

Current Situation: A Continuing Problem

- Not much has changed in 20+ years, except:
 - Increased “public” awareness
 - Better understanding of extent of OB/OD contamination and remediation costs
 - Better understanding of alternatives to OB/OD

Current Situation: A Continuing Problem

- OB/OD continues to be extensively used, some illegally.
- Alternatives exist, but not readily available.
- Difficult RCRA Permitting Process

Problem Wastes

Energetic (Explosive, Reactive, Pyrotechnic, Ignitable) Wastes

- **Fireworks:**
 - >300,000 lbs/yr confiscated by police & ATF (does not include import confiscations)
Commercial and Consumer
- **Flares**
 - Marine: required by USCG; >2million/yr become waste in FL alone
 - Roadside and Signal
- **Auto Bag Explosives**
 - 34 million air bags recalled May 2015 (2nd major recall)
- **Hobby Rocket Propellants**
 - supported by Cub Scouts

Problem Wastes (cont.)

- Military Munitions
- FUDS/BRAC Munitions (Unexploded Ordnance (UXO))
 - 4,500 sites/\$110-\$390 Billion Clean-up costs
- Explosives-Contaminated Soils/Buildings
 - *Demolition and Construction explosives*
 - *Mining, Oil and Gas, & fracking explosives*
 - *Avalanche control explosives (NPS)*
 - *Bullets*
 - *Improvised Explosive Devices (IEDs)*

Problems/Issues

- **Safety:** handling, transport, treatment
- **Human health & environment (i.e., OB/OD)**
 - **182 RCRA OB/OD sites** (60 (**33%**) active; 18 (**10%**) inactive; 104 (**57%**) closed)
 - **54 NPL OB/OD sites** (includes some RCRA OB/OD)
 - **Pollutants:** RDX, DNT, RDX, HMX, TNT; perchlorate, heavy metals, dioxins
 - **Media Impacted:** ground and surface water, soil, air

Contributes to climate change

- **Costs:** permits; remediation/closure – cleanup costs for top 10 facilities (excluding Rocky Mtn Arsenal) avg **\$116m/site** to date)

Problems/Issues (continued)

- Camp Minden
 - See **Appendix A**
- Regulatory/Compliance
 - RCRA
 - Only 4 *commercial* RCRA TSD facilities (one OB and 3 incinerators) permitted to receive energetics

60 operating OB/OD facilities; *8 still in Interim status*

Wide-spread non-compliance (OB/OD w/o permit) by law enforcement & others (fireworks, flares, auto bag explosives)

Existing RCRA Options to Address Explosive Wastes

Except for true emergencies, OB/OD is not a good fit for explosive wastes.

Allowing OB/OD is not protective.

No regulatory provisions for mobile treatment units.

"PUBLIC" INTEREST

Numerous entities have expressed a lot of interest in addressing explosive waste problems/issues

- **Federal/State/Tribal/Local Government/Community (See Appendix B).**
- **May 17, 2015 NBSCAB letter to 11 Congressional committees (see Appendix C).**

Open Burning/Open Detonation (OB/OD); **Blow-In-Place (BIP)**

OB/OD and BIP are technologies resulting in extensive:

- Air Emissions-uncontrolled emissions
- Soil contamination (7,067X)
- Surface water contamination
- Ground water contamination (5,000X)
- Cleanup/remediation costs

Contributes to climate change...

[See Appendix D]

Conclusions and Recommendations

- OB/OD is an uncontrolled, dirty technology, resulting in extensive contamination and *VERY* expensive cleanups (millions to hundreds of millions of dollars per site).
- Federal, State, Local, and Communities want action.
- Cleaner and safer alternative technologies exist (*Appendix E*).
- EPA should prohibit OB/OD (except in emergency situations) when alternatives exist.
- EPA should develop a GPRA goal to phase out OB/OD where alternatives exist.

Implementing the Recommendations

1. Budget \$300k extramural funds and 2.2 additional FTE = 3.5 total (*Document OB/OD contamination and clean-up costs; document alternatives to OB/OD*)
2. Support the development and demonstration of alternatives to OB/OD
3. Develop streamlined rule(s) (*explosives only*) to encourage replacing OB/OD with better proven technologies
4. Develop GPRA goals to: 1) replace OB/OD with alternatives; 2) get compliance
5. Continue to work and communicate with other Federal agencies, state and municipal law enforcement, and the public to solve problems

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Appendix A: Camp Minden Update

EPA

- NPL 1989: No Further Action (NOFA) **based on IC & “no exposure”**
 - 2,4,6-TNT, 2,6-DANT, RDX in ground water exceed EPA tapwater RSL
- EPA Order:
 - OB/OD only
 - Monitor air
 - No soil monitoring
 - No cleanup plan

Public

- Letter to OECA AA: 1-19-15
 - Signed by 70 EJ/community orgs
- Letter to Administrator: 1-26-15
- Messages:
 - “No” to OB/OD;
 - Viable alternatives to OB/OD exist;
 - Include public involvement

Appendix B:

*Federal/state/local and private/public entities that have expressed
interest in resolving OB/OD outstanding issues*

Federal Interest

- Interagency Committee on Explosives (ICE)
- DOT
 - NTSB
- [EPA]
- ATF, DOI
- FBI, DOJ
- DHS
- CSB
- OSHA, DOL
- USCG
- CPSC
- NASA
- FAA
- DOE
- DOD
 - DDESB
 - Army, Navy, AF
 - JIEDDO (Joint Improvised Explos Dev Defeat Org)
- NCTC (Nat Counter Terrorism Cntr)
- NRC
- Treasury (Customs, Imports, & Border Control)
- State
- CDC
- CIA
- FS, Dept Agr
- NPS, DOI
- USPIIS (Postal Inspection Svc)

ICE: 1998; 2014; 2015

Non-Federal Interest

State, Tribal & Local Governments

- National Bomb Squad Commanders Advisory Board (**NBSCAB**)
- Police
- Tribal Governments
- Env/Public Health Depts
- **Fire Marshalls**
- Emergency Responders
- North American Haz Mats Assoc

Private Sector/Others

- American Pyrotechnics Assoc (**APA**)
- National Fire Protection Assoc (**NFPA**)
- **Auto Bag Explosives Assoc.**
- **Community groups**
- **Private citizens** (e.g., **Judge Mark Toohey**, Kingsport, TN...Holston AAP)

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NBSCAB: Aug 2014; Nov 2014; Apr 2015
APA: Oct 2014

Appendix C:

- 1) May 17, 2015 NBSCAB letter to 11 Congressional Committees
- 2) NBSCAB grant proposal to demonstrate alternatives to OB/OD



National Bomb Squad Commanders Advisory Board
600 Boulevard South, Suite 104, Huntsville, AL 35892
www.nbscab.org

The Honorable Barbara Boxer, Ranking Member
Committee on Environment and Public Works
United States Senate
Washington, DC 20510

May 18, 2015

Dear Senator Boxer:

The purpose of this letter is to seek your assistance in addressing a critical and urgent environmental regulatory issue of concern to public safety bomb squads and explosive specialists in the U.S. This issue concerns the storage, treatment, and destruction of seized illegal fireworks, other explosives, and pyrotechnics.

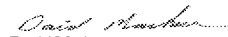
Public safety bomb squads and explosive specialists routinely destroy large quantities of these dangerous materials. According to a survey by the National Bomb Squad Commanders Advisory Board (NBSCAB), public safety bomb squads and the Bureau of Alcohol, Tobacco, Firearms, and Explosives (ATF) destroy more than 300,000 pounds of fireworks annually.¹ Handling, storing, transporting, and treating these fireworks present a number of safety, security, environmental, technical, and procedural challenges.

The principle issue of concern is that the primary method of safe disposal employed by public safety bomb squads and explosive specialists, open burning and detonation, can place these public safety officers in a position of potential violation of EPA regulations. Efforts are needed to develop technologies to provide alternative methods that can replace open burning and detonation of fireworks, other explosives, and pyrotechnics.

To this end, we respectfully request that Congress:

1. Exempt by statute, accredited public safety bomb squads and authorized explosive specialists from the need for a RCRA permit for the treatment/destruction of seized fireworks, other explosives, and pyrotechnics until an EPA approved and readily available technological solution and a streamlined permit process is developed. The exemption is only for accredited public safety bomb squads and authorized explosive specialists, and is only for the treatment/destruction of seized fireworks, other explosives, and pyrotechnics.
2. Authorize and require governmental entities to develop, demonstrate, and deploy EPA approved methods and technologies, especially mobile treatment units, for treatment, recycle/reuse, and destruction of fireworks, other explosives, and pyrotechnics that are safe and protective of human health and the environment.
3. Once readily available technological solutions are developed, authorize and require EPA to develop a new streamlined permit process under RCRA (e.g., a nation-wide permit-by-rule) based on the proven treatment/destruction technologies for fireworks, other explosives, and pyrotechnics.

Thank you for your attention to this matter. Please contact me at 720-641-2288 or markerd@ca.denver.co.us if you have any questions.


David Markert
NBSCAB Chairman

¹ This is the annual average for 2008-2012, and is based on an extrapolation of responses from 41% of the 467 public safety bomb squads in the U.S.

NBSCAB MEMBERS

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Denver Police Department

John A. Jordan
St. Paul Police Department

Richard Stewart
Orange County Sheriff's Dept.

James R. Brown
Tampa Police Department

Darin L. Henson
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New York City Police Department

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Indiana State Police

Thomas G. Lavery
DC Metro Transit Police Dept.

Ray M. Jones
Albany Police Department

Christopher Rogers
Palm Beach Sheriff's Office

Chris E. Cox
Des Moines State Police

John C. Conner II
Bristol Police Department

Appendix D:

More Detailed Info on our Broader Explosives Management Concerns/Efforts

- Safety
- Public Health/Environmental Concerns
- Contamination data
- Cleanup Costs

Appendix D (cont.)

Safety

Handling, transport, treatment (of concern to DOT, ATF, CSB, OSHA, DOD, EPA)

- Mass storage (e.g., ATF 600,000 – 800,000 lbs fireworks; California bunkers full) creates greater security/safety risks
- Transport of confiscated fireworks is a safety concern to DOT as well as EPA...obtaining EX #s to ship to an off-site commercial RCRA treatment facility is problematic (hence another justification for developing MTUs)
- When waste sits for a long time or is exposed to the elements, esp. those with stabilizers, they can deteriorate and become unstable (self-ignite)...e.g., the M6 propellant at Camp Minden.
- Fireworks accidents:

• July 29, 1980	CA	3 EOD deaths, 1 injured	handling for transport
• April 8, 2011	HI	5 deaths	dismantling for treatment
• July 4, 2012	Lansing, KS	1 death	treatment
• Jan. 2015	MI	tractor trailer accident on hwy: fire/explosion	transport
• BTW, Times Square and Boston Marathon bombers used fireworks explosives			
- UXO
 - Civilian casualties: 67 deaths, 137 injuries (mostly at Formerly Used Defense Sites (FUDs); 1942-2000)
- Ammonium nitrate (AN) (e.g., West Texas)
 - ANFO (AN + fuel oil; e.g., OK City bombing)
 - BMP for AN
- DEF

Appendix D (cont.)

Public Health and Environmental Concerns

- **Constituents:**

- Perchlorate (fireworks, flares, auto bag explosives, rocket propellant, demolition & construction)
- Other explosives: DNT, RDX, HMX, TNT, etc.
- Heavy Metals
- Dioxins

- **Media (on and off site):**

- Air (but difficult to monitor at OB/OD sites)
- Soil
- Surface water
- Ground water

Contributing to climate change...

Appendix D (cont.)

Public Health and Env. Concerns, Cont.

OB/OD

- RCRA
 - 182 OB/OD sites (56% DOD; 38% private; 6% other Federal)
 - 60 (33%) currently operating; 8 in interim status!
 - 18 (10%) inactive
 - 104 (57%) closed
 - Concerns
 - Radford AAP, VA; Indian Head, MD; Holston AAP, TN; Clean Harbors, LA; auto bag explosives manufacturer
- CERCLA
 - 54 NPL sites due to OB/OD (76% DOD; 22% private; 2% other Federal)

Appendix D (cont.)

Contaminant Data

Soils

- RDX [5.6 mg/kg EPA residual screening level]
 - Chemtronics, Inc. 290 mg/kg 52X
 - Camp Minden (LA AAP) 100mg/kg explosives
- TNT [19 mg/kg EPA resid screening level]
 - Umatilla Army Depot, OR 36,045 mg/kg 1897X
 - Chemtronics, Inc. 280 mg/kg
- Perchlorate [15 µg/L]
 - Redstone Arsenal (Army/NASA) 106,000 µg/kg 7067X
- Worst concentrations tend to be further out

Appendix D (cont.)

Contaminant Data, (cont.)

Groundwater

* <u>RDX</u> [2 µg/L]		
• Bangor Ordnance Disposal (Navy)	10,000 µg/L	5,000X
• Nebraska Ordnance Plant	534 µg/L	
• Mass Military Reservation	370 µg/L, 7300 ft plume	
• Dahlgren Naval Warfare Center	127 µg/L	
• Redstone Arsenal (Army/NASA)	96 µg/L	
* <u>TNT</u> [2 µg/L]		
• Banger Ordnance Disposal (Navy)	40 µg/L (stormwater)	20X
• Nebraska Ordnance Plant	39 µg/L	
* <u>Perchlorate</u> [15 µg/L]		
• Mass Military Reservation	500 µg/L, 10,000 ft plume	33X

Appendix D (cont.)

Cleanup Costs

• 3 contamination zones:

- Unit (incl particulate fallout area)
- Kick-out area (can include buried waste)
- Ground water plume

• Cleanup costs:

• Rocky Mountain Arsenal (Army), CO	\$2.2b (?)	• Plattsburgh Air Force Base (rounded)	\$8.9m
• Lawrence Livermore Natl Lab (DOE)	\$180m (Jordan) \$447m \$626.7m (Michelle)	• Banger Ordnance Disposal	\$8.9m
• Ft. Wingate, NM	\$110m (Jordan) \$82m \$192m (Michelle)	• Chemtronics, Inc.	\$6.2-8.2m
• Air Force Real Property Agency/ Castle Air Force Base	>\$150m	• Aqua Tech Environmental Inc. (Groce Labs)	\$4.7m
• Nebraska Ordnance Plant	\$61m	• Picatinny Arsenal, NJ	\$3.9m
• Idaho Natl Engg Lab (DOE)	\$16m (Jordan) \$32m \$48.3m (Michelle)	• Cecil Field USN Air Station	\$2.8m
• Iowa Army Ammunition Plant	\$40.3m	• US Army/NASA Redstone Arsenal	\$1.7m
• US Army Garrison/Ft. Wainwright	\$10.9m	• Moffett Naval Air Station, CO	\$1.1m
• Umatilla Army Depot, OR	>\$10m	• Bangor Naval Submarine Base	\$.9m

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Appendix E: **Possible Solutions: Handling/Treatment Options** **Under Consideration**

- Greener products
- Repurposing (controversial for some jurisdictions); reuse
- Water jet cutting & soaking
- Vacuum Soaking
- Thermal/Incineration/Rotary Kilns
- Detonation Chambers
- Chemical (including conversion to fertilizer)
- Biological/Composting
- Wet Air Oxidation
- Molten Salt
- Others to be determined (project to identify technologies is underway)